

Integration of Industrial and Educational Sphere in Modernization of Economic Relations

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Abstract:

The scientific article is devoted to the questions of developing the relevance of a human potential in modernization of an economic society system. The role of human fund in the system of new economic relations of an innovational industry is studied by the author. The influence of institutional changes to developing of economic relations is investigated in the article. The level of health, qualification, skills of using knowledge, competence nowadays is considered to be the main parts that make new economic relations of innovational industry. Based on the data of the concepts of long-term social-economic development of the Russian Federation from this time till 2020, may come to conclusion that Russia drops behind from other countries with the level of economic development though it has high educational potential. It can be explained with ineffective using of human fund and irrational investment into it. Having investigated, the authors classify into several groups: scientific center ↔ entity customer ↔ state. The main advantage of the innovational system is communicative skills and possibilities of organization. The practical importance consists in possibility of application of the theoretical provisions and practical recommendations stated in the research by bodies of legislative and executive power during the developing and implementation of federal and regional programs of support of the production and educational sphere by them in the conditions of modernization of system of the economic relations. The conclusions received in the course of research can form a methodological basis of creation of comprehensive programs of support of the production and educational sphere by means of efficiency of use of the available intellectual capital.

Keywords: human capital, innovative production; investments into education; economic growth; intellectual capital; innovative economy; social capital; innovative system.

JEL Classification: J24, O34.

1. Introduction

The main task of functioning of national economic system is maximization of satisfying society needs based on the effective using restricted resources. The reason of solving this problem is connected with the work of industry, providing extended reproduction. The effective work of an industry is conditioned by its stable development. During the developing of innovation economy it helps to solve problems connected with extended reproduction, the basis of which are the principles resource-saving, investments of human fund, social responsibility, working up new equipment and technology, scientific researches, that have practical parts (Romanov, Shubina 2012).

In the conditions of modernization of economic relation system, accumulated world experience of integration of industrial and educational sphere is important and must be improved. But, it is necessary for caring out the radical economic reforms in Russia with its different conditions to find untraditional methods to developing both industrial and educational sphere (Shvandar 2006). So, it leads to working up scientific systematic way to the beginning, regularities of functioning of these spheres in innovational economy (Yerokhina 2012).

2. Discussion and results

In modern society, one of the conditions for the development of the national economy is the production of innovations. The peculiarity of innovative production due to the conversion of scientific knowledge into new products, technologies and services through marketing research of markets and the competitive environment is defined by a radical transformation of the system of economic relations. The real sector of the economy calls for innovation, if necessary, not only to maintain the profitability of their business, but also to gain a competitive advantage in the marketplace (Coase 1988).

In this case, the innovation economy is understood as a new type of economic relations arising in the process of innovation production between its subjects. Accordingly, the formation and development of innovative economy is possible only in terms of innovative production. The members of the production process will succeed only if appropriately qualified personnel, and first of all top managers, able to orient the available human resources of the company in a more rapid adoption of innovative solutions and their implementation on the generation of ideas (Verian 1997). Business practice proves that not promising technology involves investments in the innovation process, and the management team is able to create innovative development of the enterprise (Nort 1997).

Thus, according to the World Bank, the combined potential of economic development for developed countries of 64% is formed by human capital companies and only 20% - by raw one, but for the Russian economy ratio quite different: 72% is defined by raw materials factor, and only 14% - the human potential (Gusev, Surkov 2006).

One of the elements that ensure the growth and reproduction of the accumulation of human capital in the innovation economy is education, which provides training for each of the spheres of social reproduction. The content and the state education system are determined by the socio-economic situation in the society (Fischer, Dornbush, Shmalenzi 1995). Social institution created by the education system, is designed for selection, preservation reproduction, distribution, extensive penetration into the mass consciousness of professional knowledge, scientific theories and cultural values. The education of a man is called perhaps the main form of accumulation of human capital and all investments in it boil down to the cost of education. The effect of investment in human capital is estimated solely through education. Since it is believed that only the growth of a person's education can lead to an increase in its productivity (Arend 2005)

Institute of Education serves at least two important functions: the development of the personality (the spiritual and moral development) and economic role (reproduction of skilled labor). The relationship of these functions in order and content of education and, consequently, the creation of appropriate conditions for the resource appear as a necessary prerequisite for social progress in all its manifestations. The basic principle for this investment in people, in human resources and the most effective should be the highest priority. Among the local representatives of the economic science in general and the economics of education in particular, Strumilin S.G., Jamin V.A., Kostanyan S.G., Jiltsov E.I., Daynovsky A.B., Chuprunov D.I. etc. have made a major contribution to the development of this area.

Educational services have specific characteristics that are reflected in the following. First, the effects of the consumption of educational services are a boon not only for the direct consumer, but for the economy and society as a whole. An economy in which workers have a high level of education according to the difference of technology has advantages for the economy, employing more backward technology and low-skilled labor (Blaug 1994).

At the same time by the beginning of the XXI century Russia has maintained its position in the group of the most educated countries. Although, the high educational level of the person is not yet a guarantee of constant innovation development. The development of innovative production occurs through the effective utilization of available human potential through prudent investing in his investment in the development of adequate knowledge of the system of industrial relations.

An example of this is the foreign companies: US corporations such as IBM, Digital Equipment Corp, which drain to the improvement of each of its specialist from 25 to 40 days a year. Japanese firms every 1.5-2 years produce rotation of personnel: in each employee's is "invested" money is trained by a new profession and professional growth is provided. Moreover, according to World Bank estimates for economic growth and social cohesion of the country overall level of investment in education should be 4 to 6% of gross domestic product (GDP). EU countries spend on average on education 5% of GDP, the United States - 6.6%, Japan - 3.5%, in Russia the figure in 2005 was 0.62% (Gusev 2006).

However, the situation has changed radically over the past three years. The overall level of investments in education in 2007 is 4.8% of gross domestic product (GDP). However, according to the Concept of long-term socio-economic development of the Russian Federation for the period up to 2020, this figure will continue to grow and by 2020 it will be 6.7% of GDP. It says according to the relative performance of current and future adequacy of funds for economic growth and social cohesion of the country. The main source to financing the education in Russia is still the state budget at all levels.

Table 1 - Expenditure on education in Russia for 2007-2020 years as a % of gross domestic product¹

Index	2007	2008-2010	2011-2015	2016-2020
1	2	3	4	5
Education expenditures - total, %	4,8	5	5,9	6,7
Expenses of the budget system of education, %	4,1	4,3	5,0	5,3

The dynamic of the volume of investment in education for 2000-2007 is shown in the Figure 1. As we can see from Figure 1, the cost of education from year to year increases in absolute figures, but for the formation of new innovative relationship that is not enough. However, investment in education has provided schools with modern material and technical base: an increased access to information system "Internet" (to date, all of Russia's 52,000 schools are connected to network) to a qualitatively new level of teaching, the creation of a wide network of centers for retraining and professional development of the person.

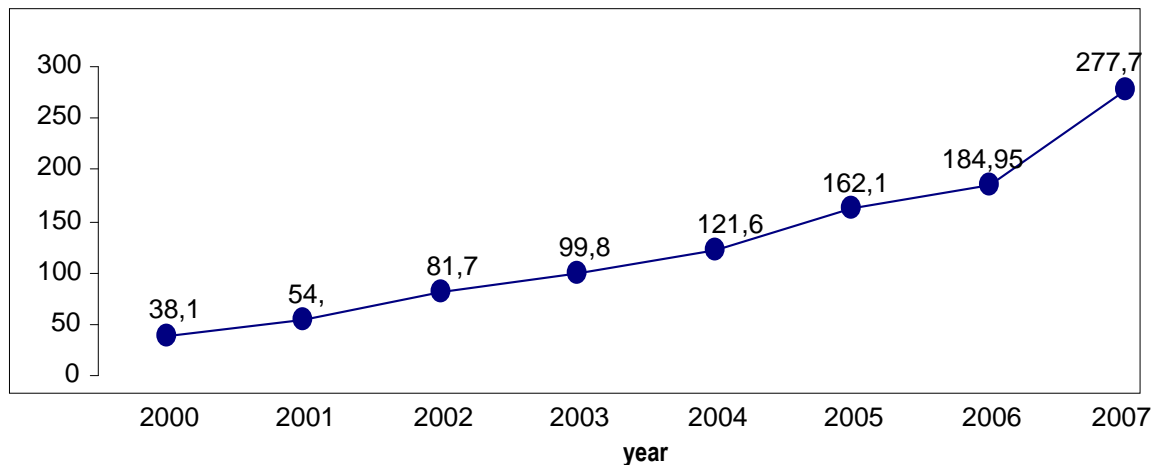


Figure1 - Dynamics of investments into the education system in Russia in 2000-2007, bln. rubles (World Bank. Russian Economic Report 2008)

Only with the development of these activities the intellectual capital will meet modern requirements. Since 2008, as declared by the Minister of Education and Science Andrei Fursenko, "is the integration of educational institutions, industry and business, i.e. there is an association of higher education institutions in the system" (Gusev, Surkov 2006)

To do this, at the present time it is necessary to attract the intellectual component of human capital - the researchers and scientists. Scientists and developers as the holders of knowledge are interested in the public funding of the research activities. But since the results of intellectual activity under the law belong to the state, the developer, at best, will get royalties. As a rule, the proposed developments are not brought to the presentation and need to be improved. Real opportunities for innovative products of scientists are absent.

In this case, the state and society, with such mental capabilities of scientists should not remain indifferent and in the future are required to use them to the full extent (see Figure 2).

¹ Law of the Russian Federation - The concept of long-term socio-economic development of the Russian Federation for the period up to 2020, collected legislation of the Russian Federation. 2008. #47, Article 5489.

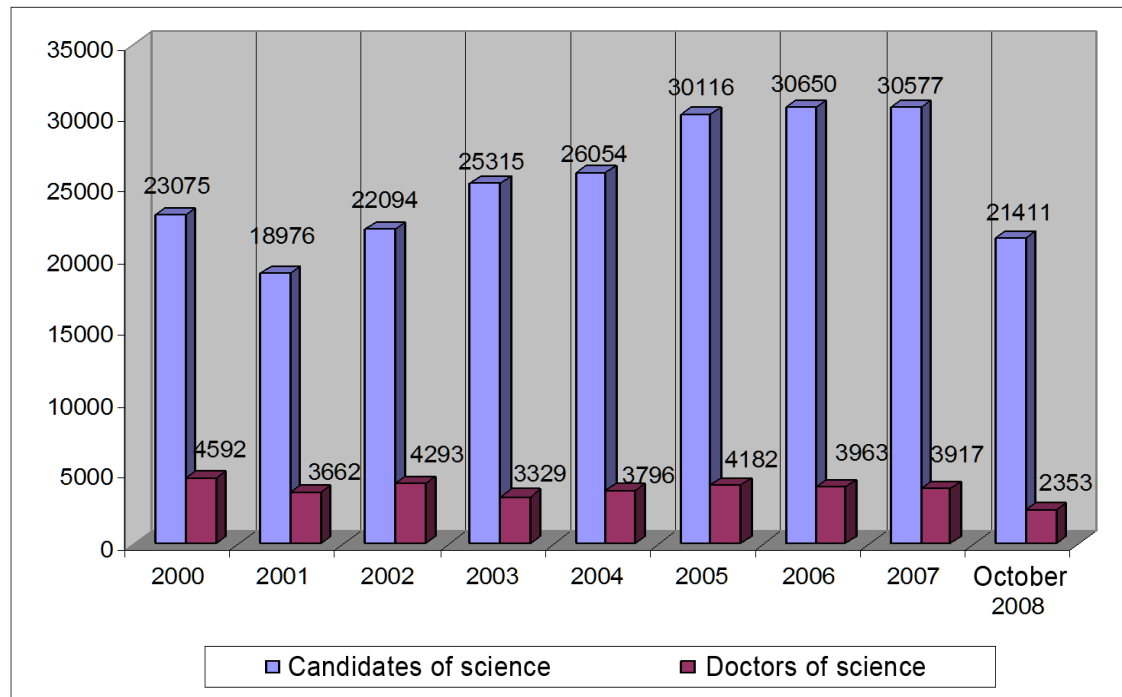


Figure 2 -Dynamics of persons approved the Higher Attestation Commission of the Russian Ministry of academic degrees in 2000 and 2008, a man (Yemelyanenko 2009).

Each year, researchers who received a doctorate degree or PhD, are becoming more and more. However, if from 2001 to 2005, their number has steadily increased - from a half to four thousand a year, in 2005-2007 it has stabilized at around 34,000. And in 2008, for the first time in eight years, it was reduced by about five thousand.

Moreover, in the present conditions the intellectual capital of the country is not enough demanded. We agree with the opinion of Academician Dmitry Lvov, who believed that "society incompetently "wastes" available human capital. First of all, it is intellectual component - specialists with higher education. The main reason for this: a paltry wage. "Inadequate financial compensation for intellectual labor forces most qualified to seek employment abroad and in other sectors of the economy. In the United States more than 40% of doctors are working in the field of engineering and computer science, and 25% of university teachers are natives from abroad (Gusev and Surkov 2006), the lion's share of Russia. According to estimates of the Commission on Education of the Council of Europe, the losses of the Russian economy because of that reach 50-60 billion dollars annually.

There are systemic problems of development of innovative production that cannot be solved by piecemeal actions of the government, innovative organizations, and educational institutions. The way out of this situation is to: a) the development of a national strategy for human capital development through training and re-training people, and b) the dialogue between business and government on the occasion of a clear division of responsibilities for the implementation of the strategy, and c) identification with the state vocational qualifications by sector, corresponding to the modern needs of society (as vocational education, and especially "in higher schools often provide information that was relevant 10-20 years ago"). This suggests that many institutions produce annually 3 million graduates with low qualifications. This is a whole army of young educated unemployed.

The complexity of the effective use of human capital in today's environment is accelerating the process of obsolescence of knowledge. Exit - constant updating of knowledge (continuing education), in accordance with the accelerated modernization of fixed assets. When the worker is retraining, an accumulation of human capital takes place, professional characteristics are increased are not only of learners, but of teachers, that is, the educational component of human capital is increasing. This is particularly important when learning in the workplace (level direct use of human factors).

Date knowledge, methods of requirement are not always "slow down" self-development rights (a person who lacks motivation to replenish the knowledge, to change them according to the information

does not develop), new knowledge is based on the old one. The period of time during which half of knowledge becomes obsolete for the employee of a manufacturing plant is 3-5 years.

An important problem in addressing the issue to update the knowledge is gap of quality training programs on technical and technological renovation of enterprises. The tool for finding the balance between them, for example, can be cooperation with higher education institutions, based on mutual interest: the graduates - in getting a job, the company - in the acquisition of highly qualified personnel.

In the implementation of the economic and contractual work between enterprise and the departments of the university is possible funding of research at the university in the direction of the company. Academician of the Russian Academy of Education G. Mukhametzyanova states that "in our time not just functionary are needed, but people who generate ideas that have mobility, adaptability enterprising. People, who are able to master new technologies quickly, will be competitive. Therefore, a new challenge now is in the sphere of education. As close as possible to the real conditions of the practice to the conditions of production government, educational institutions and enterprises - the future employer must bring together their efforts" (Mukhametzyanova 2009)

However, investment in education is not enough that is the reason why they would give to the development of innovative production, if carried out only with a view to the creation of separate divisions of the innovation system. They are promising, if they aim to strengthen the national economy. This should be attempted to create an innovative system with the following departments: scientific center ↔ entity customer ↔ state (contribution to the socio-economic life of society).

All investments are justified and in demand, then when they are being used. Under present conditions they are effective to use, if they meet the needs of all stakeholders in the innovation market generating income on invested capital in knowledge (Osadchy 2006)

In Russia this income on invested capital no one gets as the economic growth is due to cheap raw materials and low-paid labor. In developed countries, the human capital as a component integrated in the process of expanded reproduction, we have it as a foreign body. Thus, the human capital as a factor of production innovation in Russia under present conditions and with the current economic conditions, the market is not formed, because as such it is not claimed economy. Lack of attention to the intellectual component of human potential in the preparation and implementation of business decisions usually entail their low economic impact, contributing to a decrease in economic efficiency of the innovative production. Intellectual human capital is created and built up primarily through education and training.

The government, enterprises and their employees are investing funds in people, highlighting the time and money on education and vocational training necessary for the accumulation of knowledge, skills and abilities. The government spends public funds to education as they believe that a well-educated person will help accelerate the development of the country. Studies show that increasing the "education" of the society for one academic year, provides the economic growth of 5% in the short term and 2.5% in the long term.

Companies agree to pay for the training of their employees, as they expect that their costs will pay off, and they will get an additional profit due to higher worker productivity, while developing its innovative production. The very social and creative person is willing to spend not only time but also money to get education, because in most countries the better educated with better skills people are able to earn relatively more. In developed countries, every additional year of education leads to higher wages person by 10%, while in Russia the figure is only 4-5% (Bashirova 2005). The expenses for personnel training organizations on average are at the level of 0.5-0.7% wage bill, while they should be at least 1.5-2%. In the advanced economies, this item of expenditure of companies reaches 5-10% (Yerokhina 2012)

Education is indeed of great importance both for the person and for society as a whole. But consider education as the only component of human capital is not true. The priority of distribution of human efforts depends on what a person needs now and what goals he sets himself in the present and in the future. Constant changes in the structure and size of the human capital automatically create a need for various types of investments, such as for housing, and to improve working conditions in the workplace.

The data needs in any way cannot be satisfied, only by investing in education. Such an approach ignores many of the elements of human capital. These elements are interrelated, for example, an element of health and education. A healthy person is easier to study and work, carefully educated takes care about their health.

However, the deterioration of health is inevitable, but it can be slowed down by attracting investment in preventive action. The study proved that the "state of health by 15-20% for non-effect and by

50-55% depending on his lifestyle and work environment" (Erfurt 2006). Thus, the formation of healthy way of life supports its greater productivity, and subsequently the income received, both in duration and level.

An indicator of human health is the life expectancy of the population. Over the past ten years it has been steadily declining in Russia, from 69 years in 1990 to 66 in 2006 (Palkina 2006). Life expectancy in our country is for 12 years less than in the US for 8 years - than in Poland, and for 5 years - than in China (Olsevich, Mazarchuk 2005). The average male life expectancy is about 58 years, and for women is 72 (Shvandar 2006).

Thus, the Russian average men do not reach the age of retirement. According to the World Bank's Russia will lose 17.3 million (12% of the population) in 2025 (Elkov 2007). Health situation in Russia is characterized, above all, a high mortality rate in the working age (see Table 2). The general trend in Russia over the past fifteen years is a decrease in population. According to Table 2, it decreased from 148.2 million in 1990 to 141.3 million in 2008. The birth rate since 2004, gradually gaining momentum and increased by 0.2 annually for the forecast to 2008, but there is a negative trend: an increase in the annual mortality rate of about 0.1. The resident population is annually reduced by 700 thousand people (We get more than we pay: Economic Development and Trade forecasts, Economy and life, 2006).

Table 2 - Demographic indicators of the Russian Federation in 1990-2008 at the beginning of the year (Sorokin 2006)

Demographic indicators	Year						
	1990	2000	2004	2005	2006	2007	2008
1	2	3	4	5	6	7	8
Population, million	148,2	146,3	144,2	143,5	141,3	141,9	141,3
The average annual change in population	1,2	-0,2	-0,5	-0,7	-1,0	-0,6	-0,6
The birth rate (per 1,000 people)	13,4	8,7	10,5	10,7	10,9	11,1	11,3
The mortality rate (per 1,000 population)	11,2	15,4	16,0	16,1	16,3	16,3	16,4

Thus, in the next twenty years in the Russian economy, the problem of the sharp decline in working-age population exists. The reduction began with increasing intensity since 2006. In the coming two decades working-age population will decrease by 50 million people. Youth generation, entering the working age in the years 2006-2025 declining workforce will reimburse only by half. However, this is not enough for a full recovery of the labor potential: in 2025 its population will be 20% less than today. The most dramatic would be the period of 2011-2015, which will account for 40% of all for twenty years (Fedorova 2005)

Without significant investment in the health care system, without the existence of perfect-diagnosis and preventive treatment of the problem of improving human health cannot be solved. It is necessary to increase social spending (see Table 3).

Table 3 -The level of public expenditure on health in the Russian Federation for the years 2006-2020 (% GDP (gross domestic product), annual average indicator)

2006-2007	2008-2010	2011-2015	2016-2020
3,5	4,5	5,5	6,0

Note: World Bank, Russian Economic Report (Report of the World Bank), Society and economy, 2008

Every year the government increases spending on health care. The level of public expenditure on health was 3.5% of GDP for 2006-2007, compared to 2.9 and in 2003 and 2.8% in 2004. Meanwhile, the World Health Organization recommended minimum standard of government expenses on social costs - 5%. Russia will reach this standard according to the forecasted data by 2011-2015. For the smooth functioning of the Institute of Health, according to S. Glaziev (Glaziev 2006), requires a doubling of government spending, and to upgrade to a modern technological basis - they are tripling.

The main priorities of the reform of human health protection shall be:

- decrease in the number of occupational diseases;
- positive development for the health habits;

- improvement of working conditions in terms of health protection;
- allocation of funds now on preventive measures to reduce occupational diseases.

Without solutions of problems of formation of the human factor the national economy has large losses due to health and premature death. Loss of manpower in the coming years due to demographic crisis will exacerbate further the risks to the business and the country as a whole. In this case, to address existing issues requires an active and systematic population policy of the state. The aim of which should be that drastic measures to reduce the mortality rate of the population and to provide for the stabilization of fertility.

The main objectives of the government's population policy are:

- development for a long-term concrete measures to implement the population policy from the perspectives of socio-economic development of Russia;
- improving the quality of care, the development of prevention, diagnosis and treatment of socially significant diseases;
- development of measures to ensure the certification of workplaces in order to identify adverse factors affecting the health of workers;
- economic incentives for employers to improve the system of occupational safety and health;
- consideration of workers in need of better housing conditions, in determining the amount of state aid (eg, formation of a maternity capital).

It is important to note that in the present circumstances, the level of health, qualification, ability to use the knowledge, competence, are the basic elements that form the human factor. But one cannot ignore social responsibility for the decisions taken. The result of the neglect of managerial personnel demands of morality and social culture stands optionality on business partners, hired personnel, suppliers, and state. This implies the non-payment, breach of deliveries, late payment of wages, failure to comply with tax laws.

Thus, investment in intellectual capital provides economic and non-economic benefits a person, an organization, a society. The economic benefits are recognized as an increase in wages, productivity or economic growth, while the non-economic benefits - to increase social responsibility, improve the health and quality of life, improved the ecological situation in the region. In summary, we can say that Russia lags behind in terms of economic development of other countries, despite the fact that it has the highest educational potential. This can be attributed to inefficient use of available human capital and inefficient implementation of the investment in it.

Conclusion

However, the economic crisis in Russia will help to a certain extent, make the act more rationally, will promote the use of new technologies (energy saving), the innovation capacity production, address contemporary problems of development of human capital. In this case, it is an intelligent investment in human capital will contribute to the growth of its social capital, which is evident in the increasing confidence in the state as a legal institution, development and respect for moral and legal standards, as well as an understanding of the existing rules for each player present on the market field.

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